



Goals of Today's Meeting:

- Overview of the Project
- Funding
- Schedule
- Progression of Alternative Development
- Preferred Alternatives (A & B)







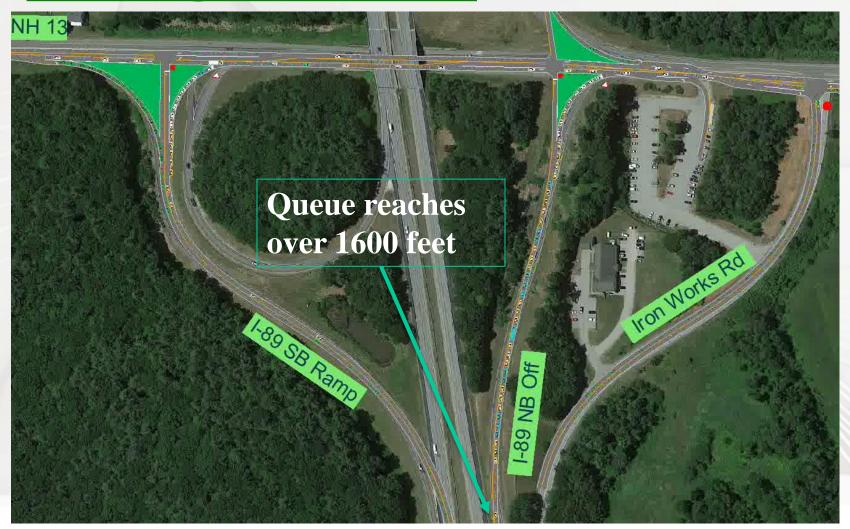
Funding

- TYP project programmed for Construction in 2023
- Budget \$2.1 Million

 $\underline{https://www.nh.gov/dot/org/projectdevelopment/planning/typ/documents/complete-typ-2021-2030-book-signed-by-gov-7-24-20.pdf}$



Existing Conditions





Bridge Constraint

Bridge deck replaced in 1993. Typical life of a deck is 60 years. Discussions regarding major work to this bridge are not anticipated until 2045-2050.





Project Schedule

- Alternatives Development March 2019 March 2020
- Public Information Meeting Fall 2020
- Preliminary Design 2021
- Final Design Spring/Summer 2022
- Advertising Fall 2022
- Construction starting 2023



Concept Development Process

- NB Off Ramp Widening
- Signalized Existing Lanes
- Single Lane Roundabouts
- Expanded Signals
- Hybrid Roundabouts
- Hybrid Roundabout at NB On/Off Only



NB Off Ramp Widening

Cost: \$0.4 Million PROS & CONS:

Pros

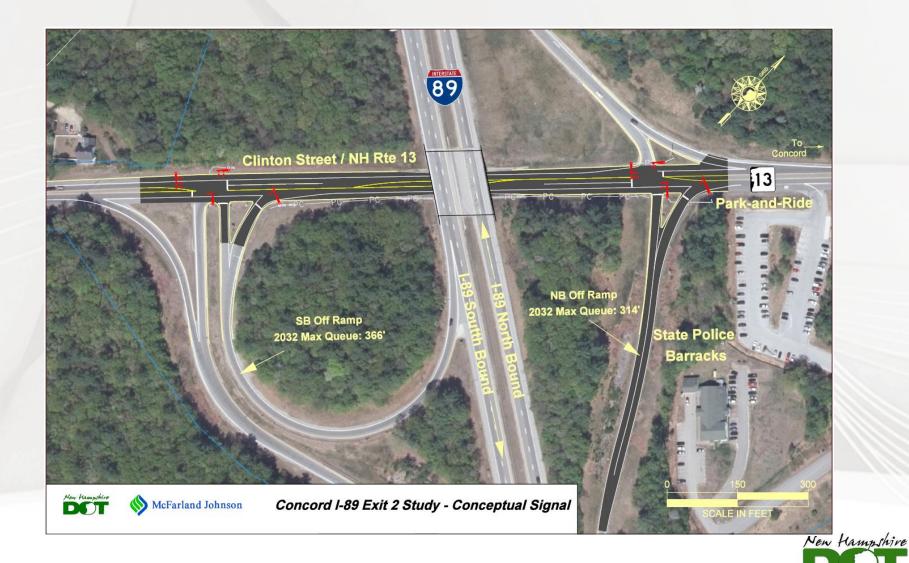
- Easy to Construct
- Works well with other concepts

- NB Off Ramp queueing continues to extend onto the Interstate
- No reduction to SB Off Ramp queueing





Signalized Existing Lanes Concept



Department of Transportation

Signalized Existing Lanes

Cost: \$1.7 Million PROS AND CONS:

Pros

- Easy to Construct
- Reduces NB and SB ramp queues to less than 400 feet in 2032
- No ROW Impacts
- Fits within budget
- Expandable for future growth

Cons

- Stopping more traffic on 6% grade
- 12-year design life (LOS F, assumes 1% traffic growth)

New Hampshire

Lefts out of Iron Works Road more difficult

Single Lane Roundabout Concept





Single Lane Roundabout Concept

Cost: \$2.7 Million PROS AND CONS:

Pros

 Reduces NB and SB ramp queues to less than 200 feet in 2032

- Yield required for traffic on 6% grade
- 10-year design life (assumes 1% traffic growth)
- Potential for gridlock in 2033
- Some ROW Impacts
- Beyond budget
- Difficult to adapt for future growth
- Lefts out of Iron Works Road more difficult



Expanded Signals Concept





Expanded Signals Concept

Cost: \$2.6 Million PROS AND CONS:

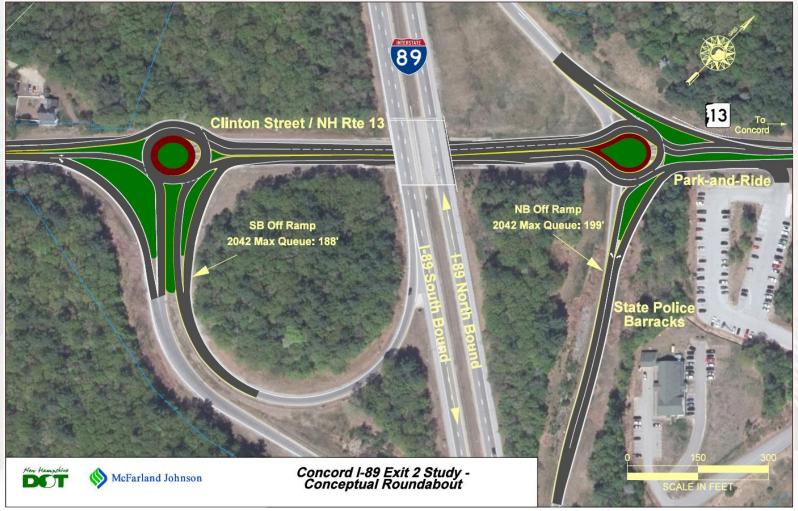
Pros

- Reduces NB and SB ramp queues
- No ROW Impacts
- I-89 Off Ramp queues under 300 feet for the NB PM and the SB AM & PM

- Stop required for traffic on 6% grade
- 16-year design life (assumes 1% traffic growth)
- Beyond budget
- Effectiveness reduced by bridge constraint
- Lefts out of Iron Works Road more difficult
- AM NB Off Ramp queue over 850 feet
- NB traffic spills back into SB Intersection in 2038
- Merging traffic at Irons Works Road



Hybrid Roundabouts Concept





Hybrid Roundabouts Concept

Cost: \$3.6 Million PROS AND CONS:

Pros

- Reduces NB and SB ramp queues
- 20+ Year Design Life (assumes 1% traffic growth)
- Best traffic operations at 20-year design life

- Yield required for traffic on 6% grade
- Some ROW Impacts
- Beyond budget
- Effectiveness reduced by bridge constraint
- Lefts out of Iron Works Road more difficult



NB On/Off Ramp Hybrid Roundabout Concept





NB On/Off Hybrid Roundabout

Cost: \$2.0 Million PROS AND CONS:

Pros

- Reduces NB ramp queues to less than 200 feet in 2032
- 20+ Year Design Life at NB Off Ramp only (assumes 1% traffic growth)

- Yield required for traffic on 6% grade
- Effectiveness reduced by bridge constraint
- No Improvements at SB On/Off Ramps
 - 10-year design life at SB Off Ramp (assumes 1% traffic growth)
- Lefts out of Iron Works Road more difficult



I-89 Exit 2 Ramp Terminus Intersection Improvements Evaluation Matrix

Alternative		Existing		Signalized Existing Layout		Single Lane Roundabout		NB Hybrid Roundabout Only		Expanded Signals		Hybrid Roundabouts	
Design Year		2022		2032		2032		2032		2038		2042	
CRITERIA		AM	PM	AM	PM	АМ	PM	AM	PM	AM	PM	АМ	PM
Traffic Operations Level Of Service (A - F)	NB On/Off Ramps Queue*	1766	1941	231	263	147	37	146	37	694	238	203	46
	NB On/Off Ramps LOS	F	F	E	D	D	А	D	Α	E	С	E	А
	SB On/Off Ramps Queue*	717	32	215	35	143	15	981	35	283	33	225	17
	SB On/Off Ramps LOS	E	В	C	В	C	Α	F	В	۵	С	С	Α
Limiting Factor		NB Off Ramp Queue Extends to Interstate		NB Off Ramp Reaches LOS F		Potential for Gridlock		SB Off Ramp Reaches LOS F & Queue Close to Interstate		NB Off Ramp Reaches LOS F & Queue Extends to Interstate		Budget	
Langley Parkway Spillback		Occasional Increased Congestion		Occasional Increased Congestion		Potential for Gridlock at SB Ramps		Occasional Increased Congestion		Occasional Increased Congestion		Potential for Gridlock at SB Ramps	
Constructability		N/A		Easy to Construct		Additional Traffic Control Required		Additional Traffic Control Required		Easy to Construct		Additional Traffic Control Required	
ROW Impacts		None		None		Some		None		None		Some	
Projected Design Life		Presently Failing		12 Year Design Life		10 Year Design Life		NB Ramps - 20+ Years SB Ramps - 10 Years		16 Year Design Life		20+ Year Design Life	
Adaptability		Easy to Adapt to Future Growth		Easy to Adapt to Future Growth		Challenging to Adapt to Future Growth		Easy to Adapt to Future Growth		Easy to Adapt to Future Growth		Easy to Adapt to Future Growth	
Estimated Construction Cost		\$0		\$1,700,000		\$2,700,000		\$2,000,000		\$2,600,000		\$3,600,000	

*All Stop, Yield and Signal Controlled Queues Reported from SimStraffic. All Roundabout Queues Reported from Sidra 7.





Bicycle and Pedestrian

Improvements could be included in any option:

Bicycles

- 5-foot shoulder
- No dedicated Bike lane

Pedestrians

- Sidewalk behind the existing piers (similar to existing condition)
- Effectiveness reduced by bridge constraint
- Additional maintenance for City of Concord



Preferred Alternative A





Preferred Alternative B





I-89 Exit 2 Ramp Terminus Intersection Improvements Evaluation Matrix

Alterr	native	Exis	ting	Signalized Ex	isting Layout	NB Hybrid Roundabout Only		
Design	n Year	20	22	20	32	2032		
CRIT	ERIA	AM	PM	AM	PM	AM	PM	
	NB On/Off Ramps Queue*	1766	1941	231	263	146	37	
Traffic Operations Level	NB On/Off Ramps LOS	F	F	E	D	D	Α	
Of Service (A - F)	SB On/Off Ramps Queue*	717	32	215	35	981	35	
	SB On/Off Ramps LOS	ш	В	U	В	F	В	
Limiting	Factor	NB Off Ramp Queue Extends to Interstate		NB Off Ramp	Reaches LOS F	SB Off Ramp Reaches LOS F & Queue Close to Interstate		
Langley Parky	way Spillback	Occasional Incre	ased Congestion	Occasional Incre	ased Congestion	Occasional Increased Congestion		
Constru	ctability	N,	/A	Easy to (Construct	Additional Traffic Control Required		
ROW In	mpacts	No	ine	No	one	None		
Projected I	Design Life	Present	y Failing	12 Year D	esign Life	NB Ramps - 20+ Years SB Ramps - 10 Years		
Adapt	ability	Easy to Adapt to	Future Growth	Easy to Adapt to	o Future Growth	Easy to Adapt to Future Growth		
Estimated Con	struction Cost	\$	0	\$1,70	0,000	\$2,000,000		

^{*}All Stop, Yield and Signal Controlled Queues Reported from SimStraffic. All Roundabout Queues Reported from Sidra 7.





Questions or Comments?

 Interim Project Manager: Tobey Reynolds

Tobey.Reynolds@dot.nh.gov

603-271-7421

